Illicit Discharge Detection and Elimination (IDDE) Report

Permit Year 4

PREPARED FOR

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Executive Summary

This Illicit Discharge Detection and Elimination (IDDE) Report for Permit Year 4 (July 1, 2021-June 30, 2022) has been developed by VHB for the Massachusetts Department of Conservation and Recreation (DCR) to track progress towards the requirements of the United States Environmental Protection Agency's (EPA) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit." This report documents progress of the IDDE program, developed to fulfill Minimum Control Measure 3 of the MS4 Permit. The goal of the IDDE program is for DCR to systematically identify and eliminate sources of non-stormwater discharges to its storm sewer system and implement procedures to prevent such discharges.

Activities under the IDDE program include the screening of regulated outfalls, which include outgoing interconnections, catchment investigations, and illicit discharge removal. During this permit year, the IDDE program tasks completed included regulated outfall screening in dry and wet weather and catchment investigations focused on Problem Outfalls performed by the Project Team of VHB and subconsultant Stacy DePasquale Engineering, Inc (SDE). The Project Team did not identify any illicit discharges in Permit Year 4. **Table 1** summarizes the screening conducted in Permit Year 4.

Table 1 Permit Year 4 Screening and Sampling Summary

Screening Activity	Details	Previously Screened	Permit Year 4 Screening	Total
	Regulated Outfalls Included in IDDE Program	-	-	1,337[1]
Dry Weather	Outfalls Screened	1,219[2]	81	1,300
	Outfalls with Flow	*96*	*6*	*102*
Wet Weather	Outfalls Screened	8[3]	2	13
	Outfalls with Flow	*4*	*1*	*8*
Illicit Discharges	Discharges Identified	1	0	1
	Gallons Removed	*unknown*	*0*	*unknown*

Notes:

1 – The number of regulated outfalls continues to be updated as field work and desktop review identify additional outfalls/interconnections or changes to the regulated status of an outfall. The total number of regulated outfalls decreased this permit year from 1,641 due to further review of outfall ownership/maintenance responsibility, outfall location, outlet discharge type, regulated status of the facility, and drainage infrastructure mapping. Additionally, in prior permit years, this number included outfalls with a prioritization of "Excluded." For permit year 4 and for subsequent permit years, only regulated outfalls that are not excluded from the IDDE program will be reported.

2 – The number of outfalls screened has decreased from the 1,682 reported in Permit Year 3. In the IDDE Summary reports for prior permit years, the total number of outfalls screened during dry weather was reported, including those that are no longer considered applicable to the IDDE program due to updated regulated status/ ownership data or outfall prioritization (see note 1). For Permit Year 4 (and subsequent permit years) only regulated outfalls that are applicable to IDDE program and have completed dry weather screenings will be reported.

3 – The number of outfalls previously screened for wet weather has decreased from 11 to 8. In Permit Year 4, it was discovered that 3 outfalls which had been marked complete must be revisited for additional pollutant of concern samples before being considered complete.

As required by the permit, each outfall was assigned a prioritization category - problem, high, low, or excluded - as part of the Year 1 update to the IDDE plan. In order to update priorities prior to performing catchment investigations, these categories were reviewed to reflect results from this year's sampling. Outfalls where dry weather sampling results indicated likely sewer inputs are ranked at the top (Highest) of the High Priority Outfalls category for investigation. **Table 2** summarizes the updated outfall prioritization.

Table 2 Outfall Prioritization

Prioritization Category	# of Outfalls
Problem	15
High (Highest)	9
High	1,183
Low	130
Excluded	219
Total	1,556
Included in the IDDE Program[1]	*1,337*

1 – Regulated outfalls that do not have a prioritization category of "Excluded."

VHB and SDE focused the Permit Year 4 catchment investigations on outfalls which were identified as Problem Outfalls and Highest Priority (**Table 3**). These are discussed in greater detail in Section 3 of this report.

Table 3 Catchment Investigations Completed

Outfall Category	Total	In Progress	Permit Year 4 Completed	Total Completed
Problem	15	11	2	4
Highest Priority	9	6	0	0
High Priority	1,183	8	0	2
Low Priority	130	0	0	0

DCR and VHB/SDE performed extensive follow up on the Problem Outfalls and have either determined that the suspect flow is from municipal interconnections and are working with the municipality to follow up, identified the likely source of flow as groundwater and capped the pipes, or are still chasing the possible illicit discharge. No illicit discharge has been identified for the Problem Outfalls. VHB also spent considerable time fine tuning field workflows and data quality assurance protocols and performing a desktop review of catchments this year to prepare for larger field work tasks once the Problem Outfalls are addressed.

DCR will continue to focus on Problem and Highest Priority Outfalls in Permit Year 5 to meet the Permit Year 7 Problem Outfalls catchment investigations deadline and to expeditiously address the potential of illicit discharges.

2

Regulated Outfall Screening

In accordance with the MS4 Permit, DCR must screen all regulated outfalls during dry weather conditions and use the results of the screening to develop an outfall ranking priority order and catchment investigation completion schedule for screening outfalls and interconnections pursuant to part 2.3.4.7.b of the MS4 Permit.

The MS4 Permit requires all regulated outfalls (excluding Problem and Excluded Outfalls) to be screened for the presence of dry weather flow. The outfall/interconnection screening in Permit Year 4 focused on completing dry weather screening for outfalls which had not been mapped in the previous year when all initial screening had been completed. A total of 81 regulated outfalls were screened for the presence of dry weather flow.[1]

DCR then ranked the outfalls as Problem, High Priority, Low Priority, or Excluded to update the outfall ranking. DCR added the Highest Priority sub-category to the High Priority category to allow DCR to better track the outfalls with screening results indicating the need for more immediate attention but that were not initially classified as Problem Outfalls at the start of the permit. Due to the statewide nature of the outfalls, we have developed a web map[2] to show the location of the areas investigated, which includes the field and lab sample results for the outfalls with dry weather flow (for more information on outfall-specific locations, please contact DCR Stormwater Unit).

[1] Dry weather flow is defined as flow occurring when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring.

[2] IDDE Report Webmap address: https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=87a35a2683aa4478a07ade7ffb7c1b2a

2.1 Dry Weather Screening and Sampling

The goal of outfall screening was to identify outfalls with dry weather flow, sample for the required parameters, and review the priority ranking of the outfall based on sampling results. **Table 3** summarizes the status of the dry weather screening. While dry weather screening of known outfalls on DCR regulated properties was completed to meet the Permit Year 3 deadline, DCR has continued to map interconnections and outfalls and therefore performed additional screening this year.

Table 3 Dry Weather Screening and Sampling

	Previously Screened	Permit Year 4 Screening	Total	% of Total[1]
Outfalls/Interconnection Screened	1,219[2]	81	1,300	97%
Outfalls with Dry Weather Flow	96	6	102	8%

Notes:

1 – Outfalls/interconnections with completed dry weather screening compared to the total number outfalls/interconnections included in the IDDE program

2 - The number of outfalls screened has decreased from the 1,682 reported in Permit Year 3. In the IDDE Summary reports for prior permit years, the total number of outfalls screened during dry weather was reported, including those that are no longer considered applicable to the IDDE program due to updated regulated status/ ownership data or outfall prioritization. For Permit Year 4 (and subsequent permit years) only regulated outfalls that are applicable to IDDE program and have completed dry weather screenings will be reported.

In accordance with DCR's IDDE Plan procedures developed to meet the requirements in the MA MS4 permit (Section 2.3.4.7.b.iii.4.b), the field teams performed field measurements and collected samples for lab analysis of dry weather flow. Field measurements included ammonia, chlorine, conductivity, salinity, surfactants (detergents), and temperature. The MS4 permit also states that samples shall be analyzed for *Escherichia coli* (E. coli) for outfalls discharging to a freshwater receiving waterbody or *Enterococcus* for a saline or brackish receiving waterbody and the receiving waterbody's pollutant of concern[3] and samples were analyzed for the applicable parameters in the lab.

2.2 Outfall Prioritization Categories Review

The results of dry weather screening must be reviewed and used to update the outfall prioritization categories each year. **Table 4** summarizes the outfall prioritization categories, and the sections below discuss the results in further detail. For outfalls with no dry weather flow the outfall remained in the same priority category, unless there was new information regarding the location or ownership of the outfall. If new data indicate that an outfall is either not a DCR-owned outfall, does not exist, or updated mapping precludes it from the

[3] Where the discharge is directly into a water quality limited water or a water subject to an approved TMDL as indicated in Appendix F of the MS4 permit; the sample shall be analyzed for the pollutant of concern identified as the cause of the impairment as specified in Appendix G of the MS4 permit.

IDDE program (e.g., updated mapping indicates that what was once mapped as an MS4 outfall is a cross culvert outlet), the outfall was removed entirely from the total regulated outfall inventory. For outfalls with dry weather flow, VHB and SDE reviewed the results and recommend next steps based on sampling results, the sewage indicator criteria included in the MS4 permit, and DCR's IDDE plan. This review included determining if a higher priority category was appropriate for a particular outfall.

Table 4 Outfall Prioritization

	# of Outfalls	
Prioritization Category	**Permit Year 3**	**Permit Year 4**
Problem	15	15
Highest	9	9
High	1,258	1,183
Low	100	130
Excluded	201	219
Total	1,579	1,556
Included in the IDDE Program[1]	*1,378*	*1,337*

1 – Regulated outfalls that do not have a prioritization category of "Excluded."

2.2.1 Problem Outfalls

Fifteen outfalls were identified as Problem Outfalls in Permit Year 1 as part of historical issues. Pursuant to part 2.3.4.7.b of the permit which indicates that the permittee should move right to catchment investigations for these outfalls they were not dry weather screened. The investigation of eleven of these fifteen outfalls is still ongoing, with four being complete, and is discussed in **Section 3, Catchment Investigations**. The catchment investigations and wet weather sampling, if appropriate, needs to be completed within 7 years of the permit effective date (July 1, 2025).[4]

2.2.2 Highest Priority Outfalls

Currently, there are nine outfalls categorized as Highest Priority. The Highest Priority category was developed by DCR to reflect where dry weather sampling results which met the likely sewer input indicators[5] to prioritize their investigation. Permit Year 4 dry weather screening did not detect likely sewer input in any of the six outfalls with dry weather flow. Upon further desktop review of outfall regulated status, we determined that one Highest Priority outfall (Outfall 36955) was not owned by DCR and therefore was removed from the DCR IDDE program. Additionally, one outfall (Manhole 666667098) had sewer input

[4] MS4 Permit Section 2.3.4.8.a

[5] As defined in the MS4 permit, likely sewage input indicators are any of the following:

- Olfactory or visual evidence of sewage,
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine (0.02 mg/L).

indicators detected during Permit Year 3 dry weather screening, but was inadvertently not flagged as Highest Priority, which was corrected in Permit Year 4. This resulted in a net change of zero highest priority outfalls between Permit Year 3 and Permit Year 4.

Like the Problem Outfalls, DCR will prioritize ruling out illicit discharges from the system before moving on to catchment investigations. DCR will strive to complete catchment investigation of Highest Priority catchments and perform wet weather sampling, if appropriate, in the same schedule as the Problem Outfalls but depending upon when the potential sewer inputs are identified and the complexity of the system an alternative schedule may be needed. See **Section 3.2** for more information.

2.2.3 High Priority Outfalls

The High Priority outfalls screened this year either had no flow or results did not indicate elevated concentrations of pollutants. Since they still discharge to receiving waters with specific listed impairments these outfalls will remain classified as High Priority. In Permit Year 4, updated data gathered through DCR field visits caused the number of High Priority outfalls to decrease to 1,183 from the 1,258 reported in Permit Year 3.

DCR is required to complete catchment investigation of High Priority catchments and perform wet weather sampling, if appropriate, within 10 years of the permit effective date (July 1, 2028).

2.2.4 Low Priority Outfalls

The Low Priority outfalls/interconnections screened this year were initially categorized as Low Priority and the screening did not indicate signs of illicit connections. Therefore, these outfalls remain categorized as Low Priority. In Permit Year 4, 30 additional Low Priority outfalls were identified.

Catchment investigations for Low Priority outfalls must be completed within 10 years of the permit effective date (July 1, 2028).

2.2.5 Excluded Outfalls

Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDE program. The permit identifies that drainage from the following categories below can be excluded:

- Roadway drainage in undeveloped areas with no dwellings and no sanitary sewers,
- Drainage for athletic fields, parks, or undeveloped green space and associated parking without services, or
- Cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

DCR has identified outfalls to be excluded from the IDDE program which are located away from sanitary sewer systems, in undeveloped areas based on land use, and not in proximity to a DCR building with restrooms. In Permit Year 4, 18 additional outfalls were either newly

mapped or identified as Excluded through desktop analysis. DCR will continue to refine excluded outfall status through catchment investigations and GIS analysis.

3

Catchment Investigations

DCR must perform catchment investigations on all non-excluded regulated outfalls as part of the IDDE program. For the catchment investigations the field crews investigated the systems by opening key junction manholes upstream of the outfalls. Data pertaining to interconnections and unmapped pipes were recorded by the field team and are available in a public web map[6]. If flow was observed in a particular pipe, the flow was sampled in accordance with DCR's IDDE Plan. If a there were signs of potential intermittent flow at a pipe, a sandbag was placed for a minimum of 48 hours to capture intermittent flows. In order to complete a catchment investigation, DCR must perform wet weather screening if the catchment includes any System Vulnerability Factors (SVFs) based on previous information or the catchment investigation. DCR has continued to refine its catchment investigation procedures as documented in the IDDE Plan.

Problem Outfall investigations must begin within two years and be completed within seven years of the permit effective date. The permit requires that all catchment investigations be completed within ten years of the permit effective date.

Catchment investigations in Permit Year 4 focused on Problem Outfalls and Highest Priority Outfalls, which include outfalls/interconnections with known or suspected contributions to illicit discharges. DCR was able to complete investigation of two Problem Outfalls in Permit Year 4 and the remaining Problem Outfall investigations are ongoing. Catchment investigations, if not yet completed, will proceed based on outfall priority. **Table 5**

[6] IDDE Report Webmap address: https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=87a35a2683aa4478a07ade7ffb7c1b2a

summarizes the status of the catchment investigations and further detail is provided in the sections below.

Table 5 Catchment Investigations Completed

		Completed	
Outfall Category	In Progress	Year 4	Overall[1]
Problem	11	2	4
Highest Priority	6	0	0
High Priority	8	0	2
Low Priority	0	0	0

1 – Overall catchment investigations completed can decrease between subsequent Permit Years in the event that completed catchments are later determined to be not be owned by DCR. In general, these catchment will primarily be those without junction manholes and SVFs

3.1 Problem Outfalls Catchment Investigations

Before the permit took effect, DCR had identified problem outfalls in six areas based on historic information or ongoing issues identified. Catchments associated with these areas were prioritized for investigation. The following sections describe each of the areas with Problem Outfalls. For simplicity we have included historical screening and sampling information regarding the investigation but highlighted the work this year.

3.1.1 Stacey Brook

The storm drainage area, comprised of two outfalls under review, is located around Stacey Brook in Lynn and Swampscott, MA. Stacey Brook flows underground through a 6-foot culvert and discharges through an outfall on Red Rock Beach and ultimately into Nahant Bay. There is a second outfall adjacent to the first. DCR's drainage network to these outfalls is mostly limited to Lynn Shore Drive, Red Rock Beach, and the landscaped areas between the roadway and beach; it also includes a portion of Eastern Ave and Humphrey Street. These outfalls were flagged as Problem Outfalls based on previous sampling results indicating high bacteria (both *E. Coli* and *Enterococcus*) as well as the presence of pharmaceutical indicators that suggested the presence of human waste. It was not initially clear which outfall had been sampled so both outfalls were classified as Problem Outfalls.

The catchment investigation occurred over several days in May and June 2019. Based on sampling results, the area of interest was narrowed to the infrastructure along Humphrey Street in Swampscott (Outfall 38017). The contributing DCR drainage infrastructure was CCTVed and did not show any signs of illicit connection or dry weather flows, but the dry weather flows in non-DCR owned pipes continued to show elevated parameters. Based on the investigation it was determined that the flow could be coming from one of the Swampscott residences adjacent to the area of interest.

DCR sent a letter to the Town of Swampscott in November 2019 with a summary of the sampling results and requested that Swampscott dye-test the several residences. COVID

remote working impacted DCR's meeting with Swampscott. DCR sent a second letter to the Town of Swampscott in February 2022 with the summary of sampling results and again requested that Swampscott perform dye-testing on residences. DCR continues to work with Swampscott to investigate and remove, if applicable, the source so DCR can perform follow up testing.

Since the second outfall (37114.1), located in Lynn, was determined to not have signs of potential illicit discharge and that the other outfall was most likely the one in question when included in the historical list it was determined that no further dry weather screening is necessary. The outfall will be screened for potential SVFs and if present, wet weather screening will be conducted before considering this catchment investigation complete. The sampling results from the 2019 and 2021 dry weather investigations did not indicate sewer input and no illicit connections were identified.

3.1.2 Morrissey Boulevard

The storm drainage system is located along Morrissey Boulevard in Dorchester and includes one outfall. The outfall drains to the mouth of the Neponset River and ultimately Dorchester Bay. This outfall (21850) was flagged as a Problem Outfall based on previous sampling results from both the Boston Water and Sewer Commission (BWSC) and DCR which showed elevated levels of *Enterococcus*. BWSC shares sampling data with DCR on an annual basis in locations where its system interconnects with DCR's system.

The catchment investigation occurred over several days in July 2019. Based on sampling results, the areas of interest were narrowed to the intersection of Morrissey Boulevard and Tenean Street and near the intersection of Morrissey Boulevard and McKone Street. DCR performed follow-up investigations of the infrastructure in the areas of interest and bricked off the connections from several pipes that were identified during CCTV investigation but not included on the map and were confirmed to be abandoned by CCTV investigation.

In order to further confirm the source of the dry weather flow and since there are BWSC sewer lines intersecting the DCR stormwater infrastructure, DCR reached out to BWSC in November 2019 with a summary of sampling results and a request to share information and investigate some of the adjacent sewer lines. DCR sent a follow-up request to BWSC in April 2021. BWSC sent a letter to DCR in response in May 2022 (dated February 2022) noting BWSC plans to reinspect a manhole in dry weather and will dye test two previously un-dye tested buildings in the area. DCR is awaiting a response from BWSC on the results of these tests. The results of the tests by BWSC are needed so DCR can determine the next steps needed to complete the investigation, which includes wet weather sampling and could potentially include additional dry weather screening. DCR will continue to coordinate with BWSC to complete this investigation in Permit Year 5.

3.1.3 Tenean Beach

The storm drainage system is located immediately south of Tenean Beach in Dorchester. The system extends from the parking area and through the park to one outfall draining to the mouth of the Neponset River and ultimately Dorchester Bay. This outfall (18257) was flagged

as a Problem Outfall based on previous sampling results showing elevated levels of *Enterococcus*.

The catchment investigation occurred over several days in July 2019, September 2019, and February 2020. The July 2019 investigation narrowed the areas of interest to two previously unmapped pipes and two catch basins. DCR determined the two unmapped pipes were no longer in use. DCR capped the two pipes. The catch basins and surrounding infrastructure were reviewed by DCR staff and it was confirmed that there were no illicit connections. DCR then cleaned the entire drainage system. To confirm there was no longer potential illicit discharges, samples were taken from two catch basins in September 2019 following the cleaning and sampling results showed a decrease in *Enterococcus*.

To close out the problem outfall catchment investigation per the permit, the outfall was sampled in February 2020, which was the soonest available dry weather screening window to conduct sampling after DCR conducted all follow-up actions. Since sampling results at the outfall did not exceed MS4 sewer input indicators, the catchment had been fully reviewed, and no SVFs have been identified in this area to require wet weather screening, the outfall catchment investigation for this drainage system is now considered complete.

3.1.4 Wollaston Beach

DCR investigated seven catchments along Wollaston Beach in Quincy, MA. The infrastructure for each of the catchments was generally along Quincy Shore Drive and the beach. All of the outfalls drain directly to Quincy Bay. These outfalls were flagged as Problem Outfalls based on previous sampling results showing elevated levels of *Enterococcus*.

The catchment investigations occurred in November 2019 and February 2020. The November investigation was cut short due to weather and the next favorable weather window was not until February 2020. The November and February investigations narrowed the area of interest to one outfall (OF-17661) with the remaining six not showing signs of potential illicit discharges based on the sewer input indicators outlined in the MS4 Permit. DCR performed follow-up structure investigations including CCTV and cleaning of the two systems. No illicit connections were identified during these follow-up investigations.

Five of the outfalls originally identified as Problem Outfalls were determined to likely be owned by the City of Quincy, including the outfall with potential illicit discharges. DCR drainage interconnects upstream in the system. The ownership of the outfalls and interconnections from DCR drainage is being confirmed via a memorandum of understanding (MOU) between DCR and the City of Quincy that is currently being drafted. Once the MOU is complete, the upstream interconnections, which in many cases include more than one per each of the original Problem Outfalls, and their respective catchments will be broken out of the original Problem Outfall catchments. These catchments will remain categorized as Problem since they drain to the outfalls historically showing elevated levels of *Enterococcus*. The resulting DCR interconnection catchments in the areas where no evidence of illicit discharges was found can be closed after wet weather screening is completed.

For the interconnection upstream of OF-17661, where contaminated flow was sampled coming from DCR infrastructure, a subsequent CCTV investigation in August 2020, during which the pipes were de-watered, showed no flow coming from DCR infrastructure and no

illicit connections were found. This indicates that the sampling results from the 2019 dry weather investigation likely sampled stagnant, standing water in the pipes. As such, wet weather screening and additional dry weather screening and will be performed to confirm that there is no evidence of illicit discharges.

3.1.5 Neponset Valley Parkway

Outfall 17289 was included in the Problem Outfall list in Permit Year 1, but DCR is not aware of historical sampling data indicating potential illicit discharges at this location. DCR completed both the dry weather screening and wet weather sampling in November 2021 and January 2022, respectively. There was no evidence of illicit discharge during either of these investigations. **The catchment investigation for the location is considered complete.**

3.1.6 Western Avenue

Four outfalls in this location were included in the Permit Year 1 Problem Outfall list but DCR is not aware of historical sampling data indicating potential illicit discharges. During review of the outfall locations in the database we determined that Outfall 19738 was a duplicate of Outfall 19739 and therefore there were only three outfalls to follow up on in this area. Outfall 19738 was removed from DCR's database.

DCR reviewed outfall 19379 to update mapping in this location. DCR is planning to replace drainage infrastructure in the catchment once an environmental permit for the work is granted. Once the infrastructure is replaced, DCR will complete the catchment investigation.

For the remaining two outfalls (19105 and 19377), the catchment investigations were completed in June 2021; there was no flow present. There are no known SVFs in this location and the catchment investigation for these locations is considered complete.

3.1.7 Problem Catchment Investigation Summary Table

The table below summarizes the status of the Problem Outfalls and the actions taken during Permit Year 4 to identify if the discharge includes illicit flows.

Table 6 Problem Outfalls Catchment Investigations Summary

Receiving Water (ID), Area/ Town; Outfall	Catchment Investigation Complete?		Permit Year 4 Investigation Actions	DCR's Next Steps
	Dry Weather	Wet Weather		
Nahant Bay (MA93-24); Stacey Brook, Lynn and Swampscott				
Stacey Brook 1 (interconnection to MH-25415, drains to Outfall 38017)	Yes	No	DCR updated drainage system mapping to show appropriate ownership of outfall pipe. DCR screened the interconnection points into Swampscott infrastructure and found no flow originating from DCR-owned infrastructure. DCR sent letter to Swampscott in February 2022 to recommend dye testing and to confirm infrastructure ownership	DCR will follow-up with Swampscott to complete the recommended dye-testing. DCR will respond as need based on the dye testing results.
Stacey Brook 2 (interconnection to MH-25418, drains to Outfall 37114.1)	Yes	Yes	DCR updated the mapping in the catchment to reflect ownership and show that DCR interconnects to Lynn infrastructure. DCR screened the interconnection point in December 2021. No signs of sewer input/ illicit connection.	Wet weather screening needed to complete catchment investigation
Neponset River (MA73-04); Morrissey Boulevard, Dorchester				
Morrissey Blvd 1 (OF-21850)	No	No	DCR and BWSC met in Jan 2022 to discuss the letter DCR sent April 2021 which recommended next steps for BWSC (sewer repairs, CCTV of system and investigate BWSC sewer line). BWSC issued a response to DCR in May 2022 noting their investigation has not found evidence of illicit connection or leaking sewage.	BWSC will conduct additional dry weather screening. DCR is waiting on the results of BWSC's screening and sampling and will determine the appropriate next steps to complete the catchment investigation.
Tenean Beach 1 (OF-18257)	Yes	No SVFs	Problem outfall catchment investigation complete Prior to Permit Year 4.	Screening complete.
Quincy Bay (MA70-05); Wollaston Beach, Quincy				
Wollaston Beach 1 (OF-34509.3)	Yes	No	No actions taken in Permit Year 4 because DCR is awaiting confirmation of ownership from City of Quincy.	Wet weather screening and infrastructure ownership confirmation needed to complete catchment investigation.
Wollaston Beach 2 (OF-34507.3)	Yes	No	No actions taken in Permit Year 4 because DCR is awaiting confirmation of ownership from City of Quincy.	Wet weather screening and infrastructure ownership confirmation needed to complete catchment investigation.

Receiving Water (ID), Area/ Town; Outfall	Catchment Investigation Complete?		Permit Year 4 Investigation Actions	DCR's Next Steps
	Dry Weather	Wet Weather		
Wollaston Beach 3 (4 interconnections to MH-34502.3, drains to OF-17661)	Yes	No	No actions taken in Permit Year 4 because DCR is awaiting confirmation of ownership from City of Quincy.	Additionally dry weather screening at manhole 34502.3 when weather and tidal conditions allow, wet weather screening, and infrastructure ownership confirmation needed to complete catchment investigation.
Wollaston Beach 4 (3 interconnections to MH-34497.3, 1 interconnection to MH-34454.3, 1 interconnection to MH-29946, drains to OF-34500.3)	Yes	No	No actions taken in Permit Year 4 because DCR is awaiting confirmation of ownership from City of Quincy.	Wet weather screening and infrastructure ownership confirmation needed to complete catchment investigation.
Wollaston Beach 5 (MH-37223.1, MH-666667017 interconnects to OF-38020)	Yes	No	No actions taken in Permit Year 4 because DCR is awaiting confirmation of ownership from City of Quincy.	Wet weather screening and infrastructure ownership confirmation needed to complete catchment investigation.
Wollaston Beach 6 (MH-37193 interconnects to OF-37221.1)	Yes	No	Ownership of the outfall was confirmed to be City of Quincy.	Wet weather screening needed to complete catchment investigation.
Wollaston Beach 7 (MH-37195.00, MH-6002.40 interconnects to OF-90000.1)	Yes	No	No actions taken in Permit Year 4 because DCR is awaiting confirmation of ownership from City of Quincy.	Wet weather screening and infrastructure ownership confirmation needed to complete catchment investigation.
Neponset River (MA73-02); Neponset Valley Parkway, Boston				
Neponset (OF-17289)	Yes	Yes	Dry weather screening was completed in November 2021 and no flow was observed, Wet weather sampling was completed in January 2022. Sample results did not meet sewer input indicators. No other signs of illicit connections into DCR drainage system. **Problem outfall catchment investigation complete.**	Screening complete.

Receiving Water (ID), Area/ Town; Outfall	Catchment Investigation Complete?		Permit Year 4 Investigation Actions	DCR's Next Steps
	Dry Weather	Wet Weather		
Charles River (MA72-36); Western Avenue, Cambridge				
Western Ave 1 (OF-19105)	Yes	No SVFs	Catchment was wet weather screened twice in October 2021 and no flow was found either time. **Problem outfall catchment investigation complete.**	Screening complete.
Western Ave 2 (OF-19377)	Yes	No SVFs	Problem outfall catchment investigation complete Prior to Permit Year 4.	Screening complete.
Western Ave 4 (OF-19379)	No	No SVFs	DCR reviewed and confirmed the drainage infrastructure was mapped correctly. DCR Is planning to replace drainage infrastructure in the catchment and therefore the investigation has not continued.	DCR will replace the drainage infrastructure at this location and continue the catchment investigation process.

3.2 Highest Priority Catchment Investigations

In addition to investigating Problem Outfalls, DCR focused on Highest Priority Outfalls in Permit Year 4. As of this report, DCR has begun dry weather investigations for six of the nine Highest Priority catchments. A summary of the actions performed for the Highest Priority catchments are included in Table 7.

Table 7 Highest Priority Outfalls Catchment Investigations Summary

Receiving Water (ID), Area/ Town; Outfall	Catchment Investigation Complete?		Permit Year 4 Investigation Actions	DCR's Next Steps
	Dry Weather	Wet Weather		
Mystic River and Tribs (MA71-03 & MA71-13) Mystic Valley Parkway, Medford				
OF-22724	Yes	No	DCR repaired a collapsed pipe in the catchment that was preventing continuation of the catchment investigation.	DCR to continue catchment investigation and sample non-DCR pipe that interconnects to DCR system from the north to determine if the non-DCR pipe is the source of illicit discharge.
OF-22021	Yes	No	DCR lined a failing pipe in the catchment that infiltrating water and was preventing continuation of the catchment investigation.	DCR to continue catchment investigation and perform follow-up sampling to confirm infiltration was the issue.
OF-27645	Yes	No	DCR sent email to MWRA summarizing dry weather sampling results in this catchment. MWRA completed sewer system construction work in this catchment area in May that may have been causing elevated sewer indicators in sample.	DCR to re-screen manholes to confirm construction mitigated prior issues with contamination in the area.
Malden River (MA71-05) Mystic View Rd, Everett				
OF-27645	Yes	No	DCR performed dye-testing at the Target and Costco buildings at the Gateway Shopping Center adjacent to the catchment which did not indicate the sewer lines were the source of contamination. DCR contacted Everett requesting as-built plans for the shopping center to determine if there are any sewer lines that have not been tested yet.	DCR to follow-up on request to Everett and determine next steps for the catchment investigation depending on presence of additional sewer lines.

Receiving Water (ID), Area/ Town; Outfall	Catchment Investigation Complete?		Permit Year 4 Investigation Actions	DCR's Next Steps
	Dry Weather	Wet Weather		
Neponset River (MA73-02) Truman Parkway, Hyde Park				
OF-666666991	Yes	No	DCR performed sandbag testing for dry weather flow in November 2021.	DCR to follow-up on sandbag testing results.
Lynn Harbor (MA93-52) Lynn Shore Reservation, Nahant				
OF-666667157	Yes	No	DCR replaced all manhole covers for structures in the catchment that had been sealed closed and was preventing completing catchment investigation.	DCR will continue the catchment investigation now that the structures are accessible for sampling.

3.3 High Priority Catchment Investigations

There were eight High Priority catchment investigations in progress in Permit Year 4. Two High Priority catchment investigations were completed during Permit Year 3. Permit Year 3 activity on these catchments primarily consisted of dry weather investigations and infrastructure mapping revisions. No actions were completed on the eight in progress catchments in Permit Year 4 in order to focus on the Highest and Problem catchments. DCR will continue to make progress on the active High Priority catchment investigations when possible.

3.4 Low Priority Catchment Investigations

There were no Low Priority catchment investigations in progress or completed during Permit Year 4. These catchments will be completed following the completion of High Priority catchments.

Illicit Discharge Removal

As detailed in **Section 3, Catchment Investigations,** DCR is in the process of conducting Problem Outfall investigations. DCR was able to narrow the area of interest for each of the Problem Outfall catchments but have not confirmed that there is an illicit discharge.

Prior to Permit Year 4, DCR identified one source of illicit discharge into a drainage system draining into the Charles River during a field visit that was unrelated to the IDDE program in Boston and this illicit discharge was eliminated promptly. Below are the details for the illicit discharge:

- *Location*: Community Rowing, Boston (Charles River)
- *Description*: two sinks (hand washing basins) discharging into a catch basin
- *Method and date of discovery*: catchment investigation on 5/19/2021
- *Date of elimination*: 6/7/2021
- *Date of confirmatory Dry Weather Screening*: N/A[7]
- *Date of confirmatory Wet Weather Screening*: N/A[12]
- *Mitigation or enforcement action or planned corrected measures and schedule for completing the illicit discharge removal:* N/A
- *Estimated gallons of flow removed:* Unknown. It is unclear how long the hand washing basins were discharging to the catch basin and approximately how often it may have been used during this period.

No illicit discharges to the DCR drainage system were identified in Permit Year 4.

[7] The structure at which this illicit discharge was discovered did not have flow nor did any structures in the catchment show signs of an illicit discharge before the illicit connection was removed. This illicit discharge was discovered incidentally during the investigation, rather than being located as the result of detection through dry weather flow screening/sampling. As such, confirmatory screening was deemed unnecessary.